

lit search
5,687,767
Reissue 09/986,346

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

5687767

November 18, 1997

Uni-directional fluid valve

REISSUE: November 15, 1999 - Reissue Application filed Nov. 15, 1999 (O.G. Mar. 7, 2000) Ex. Gp.: 3753; Re. S.N. 09/442,082 March 7, 2000; November 8, 2001 - Reissue Application filed Ex. Gp.: 3753; Re. S.N. 09/986,346 May 14, 2002

APPL-NO: 08686839

FILED-DATE: July 26, 1996

GRANTED-DATE: November 18, 1997

Selected file: PLUSPAT

**** SS 1: Results 1**

1 / 1 PLUSPAT - @QUESTEL-ORBIT

PN - US5687767 A 19971118 [US5687767]
TI - (A) Uni-directional fluid valve
PA - (A) RACAL HEALTH & SAFETY LTD (GB)
IN - (A) BOWERS JOHN LAWRENCE (GB)
AP - US68683996 19960726 [1996US-0686839]
PR - GB9515986 19950804 [1995GB-0015986]
IC - (A) F16K-015/16
EC - A62B-018/10
F16K-015/14H
PCL - ORIGINAL (O) : 137855000; CROSS-REFERENCE (X) : 128205240
128206150
DT - Corresponding document
CT - US2864394; US2999498; US3191618; US3568712; US4414973; US4456016;
US4630604; US4838262; US4873972; US4934362; US4958633; US4974586;
US4981134; US5036806; US5255687; US5325892; US5346375; DE4029939;
GB2072516
STG - (A) United States patent
AB - A uni-directional fluid valve particularly for use as an
exhalation valve for a filter mask comprises a flexible flap
attached at one end to a concave portion of a seat. The mounting
of the flap imparts to it a transverse curvature, stiffening the
flap sufficiently for it to remain seated in the absence of a
pressure differential across it even when orientated with the seat
above the flap.

1 / 1 LGST - @LEGSTAT

PN - US 5687767 [US5687767]
AP - US 686839/96 19960726 [1996US-0686839]
DT - US-P
ACT - 19960726 US/AE-A
APPLICATION DATA (PATENT)
US 686839/96 19960726 [1996US-0686839]

19960726 US/AS02
ASSIGNMENT OF ASSIGNOR'S INTEREST
RACAL HEALTH & SAFETY LIMITED WESTERN ROAD BRACKNELL, BERKSHIRE
RG12 1RG, ENGLAN * BOWERS, JOHN LAWRENCE : 19960704

19971118 US/A
PATENT

19980617 US/AS02
ASSIGNMENT OF ASSIGNOR'S INTEREST
MINNESOTA MINING AND MANUFACTURING COMPANY P.O. BOX 33427 ST.
PAUL, MINNESOTA 55 * RACAL HEALTH & SAFETY LIMITED : 19980130

20000307 US/RF
REISSUE APPLICATION FILED
19991115

20020514 US/RF
REISSUE APPLICATION FILED
20011108
UP - 2002-22

1 / 1 CRXX - ©CLAIMS/RRX
PN - 5,687,767 A 19971118 [US5687767]
PA - Racal Health and Safety Ltd GB
ACT - 19980617 REASSIGNED
ASSIGNMENT OF ASSIGNOR'S INTEREST

Assignor: RACAL HEALTH & SAFETY LIMITED DATE SIGNED: 01/30/1998

Assignee: MINNESOTA MINING AND MANUFACTURING COMPANY P.O. BOX
33427 ST. PAUL, MINNESOTA 55133-342

Reel 009257/Frame 0391

Contact: MINNESOTA MINING AND MANUFACTURING CO. KARL G. HANSON
OFFICE OF INTELLECTUAL PROPERTY COUNSEL P.O. BOX 33427 ST. PAUL,
MN 55133-3427

19991115 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20000307
REISSUE REQUEST NUMBER: 09/442082
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3753

Reissue Patent Number:

20011108 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020514
REISSUE REQUEST NUMBER: 09/986346
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3753

Reissue Patent Number:

1 / 2 PAST - ©Thomson Derwent
AN - 200220-001727
PN - 5687767 A [US5687767]
OG - 2002-05-14
ACT - REISSUE APPLICATION FILED

2 / 2 PAST - ©Thomson Derwent
AN - 200010-001235
PN - 5687767 A [US5687767]
OG - 2000-03-07
ACT - REISSUE APPLICATION FILED

Selected file: INPADOC

**** SS 1: Results 14**

1 / 14 INPADOC - ©INPADOC
PN - AU 60791/96 A1 19970206 [AU9660791]
TI - UNI-DIRECTIONAL FLUID VALVE

IN - NAME NOT GIVEN
PA - RACAL HEALTH & SAFETY LTD
AP - AU 60791/96-A 19960729 [1996AU-0060791]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-009/02; F16K-015/16; A61M-039/24; A61M-016/20

2 / 14 INPADOC - ©INPADOC

PN - AU 709637 B2 19990902 [AU-709637]
TI - UNI-DIRECTIONAL FLUID VALVE
IN - BOWERS JOHN LAWRENCE
PA - MINNESOTA MINING & MFG
AP - AU 60791/96-A 19960729 [1996AU-0060791]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-009/02; F16K-015/16; A61M-039/24; A61M-016/20

1 / 1 LEGALI - ©LEGSTAT

PN - AU 709637 [AU-709637]
DT - AU-P
ACTE - 20000106 AU/FGA [+]
PATENT SEALED (STANDARD PATENT)
UP - 2000-37

3 / 14 INPADOC - ©INPADOC

PN - CA 2181878 AA 19970205 [CA2181878]
TI - UNI-DIRECTIONAL FLUID VALVE
LA - ENG
IN - BOWERS JOHN LAWRENCE [GB]
PA - RACAL HEALTH & SAFETY LTD [GB]
AP - CA 2181878/96-A 19960723 [1996CA-2181878]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - F16K-015/16; A62B-018/10

4 / 14 INPADOC - ©INPADOC

PN - DE 69620074 C0 20020502 [DE69620074]
TI - RUECKSCHLAGVENTIL
IN - BOWERS JOHN LAWRENCE [GB]
PA - MINNESOTA MINING & MFG [US]
AP - DE 69620074/96-A 19960716 [1996DE-6020074]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-018/10; F16K-015/14

1 / 2 LEGALI - ©LEGSTAT

PN - DE 69620074 [DE69620074]
DT - DE-P
ACTE - 20020502 DE/REF-P
CORRESPONDS TO
(EP 756881 20020502 [EP-756881])
UP - 2002-18

2 / 2 LEGALI - ©LEGSTAT

PN - EP 756881 [EP-756881]
AP - EP 96305203/96 19960716 [1996EP-0305203]
DT - EP-P
ACTE - 19960716 EP/AE-A
EP-APPLICATION
EP 96305203/96 19960716 [1996EP-0305203]

19970205 EP/AK-A2 [+]
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITHOUT SEARCH
REPORT:
DE ES FR GR IE NL SE

19970205 EP/A2 [+]
PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT

19980311 EP/AK-A3 [+]
DESIGNATED CONTRACTING STATES IN A SEARCH REPORT:
DE ES FR GR IE NL SE

19980311 EP/A3 [+]
SEPARATE PUBLICATION OF THE SEARCH REPORT (ART. 93)

19981021 EP/RAP1
APPLICANT REASSIGNMENT (CORRECTION)
MINNESOTA MINING AND MANUFACTURING COMPANY

19981104 EP/17P [+]
REQUEST FOR EXAMINATION FILED
980903

19991208 EP/17Q [+]
FIRST EXAMINATION REPORT
19991025

20020327 EP/AK-B1 [+]
DESIGNATED CONTRACTING STATES MENTIONED IN A PATENT
SPECIFICATION:
DE ES FR GR IE NL SE

20020327 EP/B1 [+]
PATENT SPECIFICATION

20020502 EP/REF-P
CORRESPONDS TO:
(DE 69620074 20020502 [DE69620074])

20020508 EP/AH-P
DIVISIONAL APPLICATION (ART. 76) IN:
(EP 1203599 20020508 [EP1203599])

20020515 EP/REG; IE/FG4D
IE: EUROPEAN PATENTS GRANTED DESIGNATING IRELAND
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UP - 2002-27

5 / 14 INPADOC - ©INPADOC
PN - EP 756881 B1 20020327 [EP-756881]
TI - UNI-DIRECTIONAL FLUID VALVE
LA - ENG
IN - BOWERS JOHN LAWRENCE [GB]
PA - MINNESOTA MINING & MFG [US]
AP - EP 96305203/96-A 19960716 [1996EP-0305203]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-018/10; F16K-015/14
DS - DE* ES* FR* GR* IE* NL* SE*

1 / 3 LEGALI - ©LEGSTAT
PN - EP 1203599 [EP1203599]

AP - EP 01121471/01 19960716 [2001EP-0121471]
DT - EP-P
ACTE - 19960716 EP/AE-A
EP-APPLICATION
EP 01121471/01 19960716 [2001EP-0121471]

20020508 EP/AC-P
DIVISIONAL APPLICATION (ART. 76) OF:
(EP 756881 20020508 [EP-756881])

20020508 EP/AK-A2 [+]
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITHOUT SEARCH
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DE ES FR GR IE NL SE

20020508 EP/A2 [+]
PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT
UP - 2002-19

2 / 3 LEGALI - @LEGSTAT
PN - DE 69620074 [DE69620074]
DT - DE-P
ACTE - 20020502 DE/REF-P
CORRESPONDS TO
(EP 756881 20020502 [EP-756881])
UP - 2002-18

3 / 3 LEGALI - @LEGSTAT
PN - EP 756881 [EP-756881]
AP - EP 96305203/96 19960716 [1996EP-0305203]
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19970205 EP/AK-A2 [+]
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MINNESOTA MINING AND MANUFACTURING COMPANY

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DIVISIONAL APPLICATION (ART. 76) IN:
(EP 1203599 20020508 [EP1203599])

20020515 EP/REG; IE/FG4D
IE: EUROPEAN PATENTS GRANTED DESIGNATING IRELAND
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UP - 2002-27

6 / 14 INPADOC - ©INPADOC

PN - EP 1203599 A2 20020508 [EP1203599]
TI - A FILTER FACE MASK
LA - ENG
IN - BOWERS JOHN LAWRENCE [GB]
PA - MINNESOTA MINING & MFG [US]
AP - EP 1121471/01-A 19960716 [2001EP-1121471]
PR - EP 96305203/96-A3 19960716 [1996EP-0305203]
GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-018/10; F16K-015/14
DS - DE* ES* FR* GR* IE* NL* SE*

1 / 2 LEGALI - ©LEGSTAT

PN - EP 1203599 [EP1203599]
AP - EP 01121471/01 19960716 [2001EP-0121471]
DT - EP-P
ACTE - 19960716 EP/AE-A
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DIVISIONAL APPLICATION (ART. 76) OF:
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DE ES FR GR IE NL SE

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PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT
UP - 2002-19

2 / 2 LEGALI - ©LEGSTAT

PN - EP 756881 [EP-756881]
AP - EP 96305203/96 19960716 [1996EP-0305203]
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EP-APPLICATION

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19970205 EP/AK-A2 [+]

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7 / 14 INPADOC - ©INPADOC

PN - EP 756881 A2 19970205 [EP-756881]

TI - UNI-DIRECTIONAL FLUID VALVE

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IC - A62B-018/10; F16K-015/14

DS - DE* ES* FR* GR* IE* NL* SE*

1 / 3 LEGALI - @LEGSTAT

PN - EP 1203599 [EP1203599]
AP - EP 01121471/01 19960716 [2001EP-0121471]
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DIVISIONAL APPLICATION (ART. 76) OF:
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2 / 3 LEGALI - @LEGSTAT

PN - DE 69620074 [DE69620074]
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ACTE - 20020502 DE/REF-P
CORRESPONDS TO
(EP 756881 20020502 [EP-756881])
UP - 2002-18

3 / 3 LEGALI - @LEGSTAT

PN - EP 756881 [EP-756881]
AP - EP 96305203/96 19960716 [1996EP-0305203]
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ACTE - 19960716 EP/AE-A
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EP 96305203/96 19960716 [1996EP-0305203]

19970205 EP/AK-A2 [+]
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITHOUT SEARCH
REPORT:
DE ES FR GR IE NL SE

19970205 EP/A2 [+]
PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT

19980311 EP/AK-A3 [+]
DESIGNATED CONTRACTING STATES IN A SEARCH REPORT:
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19980311 EP/A3 [+]
SEPARATE PUBLICATION OF THE SEARCH REPORT (ART. 93)

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19991025

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PATENT SPECIFICATION

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DIVISIONAL APPLICATION (ART. 76) IN:
(EP 1203599 20020508 [EP1203599])

20020515 EP/REG; IE/FG4D
IE: EUROPEAN PATENTS GRANTED DESIGNATING IRELAND
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UP - 2002-27

8 / 14 INPADOC - @INPADOC

PN - EP 756881 A3 19980311 [EP-756881]
TI - UNI-DIRECTIONAL FLUID VALVE
LA - ENG
IN - BOWERS JOHN LAWRENCE [GB]
PA - RACAL HEALTH & SAFETY LTD [GB]
AP - EP 96305203/96-A 19960716 [1996EP-0305203]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - A62B-018/10; F16K-015/14
DS - DE* ES* FR* GR* IE* NL* SE*

1 / 3 LEGALI - @LEGSTAT

PN - EP 1203599 [EP1203599]
AP - EP 01121471/01 19960716 [2001EP-0121471]
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DIVISIONAL APPLICATION (ART. 76) OF:
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20020508 EP/A2 [+]
PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT
UP - 2002-19

2 / 3 LEGALI - @LEGSTAT

PN - DE 69620074 [DE69620074]
DT - DE-P

ACTE - 20020502 DE/REF-P
CORRESPONDS TO
(EP 756881 20020502 [EP-756881])
UP - 2002-18

3 / 3 LEGALI - @LEGSTAT
PN - EP 756881 [EP-756881]
AP - EP 96305203/96 19960716 [1996EP-0305203]
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EP 96305203/96 19960716 [1996EP-0305203]

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(EP 1203599 20020508 [EP1203599])

20020515 EP/REG; IE/FG4D
IE: EUROPEAN PATENTS GRANTED DESIGNATING IRELAND
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UP - 2002-27

9 / 14 INPADOC - @INPADOC

PN - GB 9515986 A0 19951004 [GB9515986]
TI - UNI-DIRECTIONAL FLUID VALVE
PA - RACAL HEALTH & SAFETY LTD
AP - GB 9515986/95-A 19950804 [1995GB-0015986]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]

10 / 14 INPADOC - @INPADOC

PN - GB 9614843 A0 19960904 [GB9614843]
TI - UNI-DIRECTIONAL FLUID VALVE
PA - RACAL HEALTH & SAFETY LTD
AP - GB 9614843/96-A 19960715 [1996GB-0014843]
PR - GB 9614843/96-A 19960715 [1996GB-0014843]
GB 9515986/95-A 19950804 [1995GB-0015986]

11 / 14 INPADOC - @INPADOC

PN - GB 2304176 A1 19970312 [GB2304176]
TI - UNI-DIRECTIONAL FLUID VALVE
IN - BOWERS JOHN LAWRENCE
PA - RACAL HEALTH & SAFETY LTD [GB]
AP - GB 9614843/96-A 19960715 [1996GB-0014843]
PR - GB 9614843/96-A 19960715 [1996GB-0014843]
GB 9515986/95-A 19950804 [1995GB-0015986]
IC - F16K-015/16; A62B-018/10

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PN - GB 2304176 [GB2304176]
AP - GB 9614843/96 19960715 [1996GB-0014843]
DT - GB-P
ACTE - 19960715 GB/AE-A
APPLICATION DATA
GB 9614843/96 19960715 [1996GB-0014843]

19970312 GB/A1
APPLICATION PUBLISHED

19990106 GB/732E
PROCEEDING UNDER SECTION 32 PATENTS ACT 1977

19990818 GB/B2 [+]
PATENT GRANTED

UP - 1999-33

12 / 14 INPADOC - @INPADOC

PN - GB 2304176 B2 19990818 [GB2304176]
TI - UNI-DIRECTIONAL FLUID VALVE
IN - BOWERS JOHN LAWRENCE
PA - RACAL HEALTH & SAFETY LTD [GB]; MINNESOTA MINING & MFG [US]
AP - GB 9614843/96-A 19960715 [1996GB-0014843]
PR - GB 9614843/96-A 19960715 [1996GB-0014843]
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IC - F16K-015/16; A62B-018/10

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PN - GB 2304176 [GB2304176]
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APPLICATION DATA
GB 9614843/96 19960715 [1996GB-0014843]

19970312 GB/A1
APPLICATION PUBLISHED

19990106 GB/732E
PROCEEDING UNDER SECTION 32 PATENTS ACT 1977

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PATENT GRANTED

UP - 1999-33

13 / 14 INPADOC - @INPADOC
PN - HK 1013433 A1 20001117 [HK1013433]
TI - UNI-DIRECTIONAL FLUID VALVE
IN - BOWERS JOHN LAWRENCE
PA - MINNESOTA MINING & MFG [US]
AP - HK 98114813/98-A 19981222 [1998HK-0114813]
PR - GB 9515986/95-A 19950804 [1995GB-0015986]
IC - F16K-000/00; A62B-000/00

14 / 14 INPADOC - @INPADOC
PN - US 5687767 A 19971118 [US5687767]
TI - UNI-DIRECTIONAL FLUID VALVE
IN - BOWERS JOHN LAWRENCE [GB]
PA - RACAL HEALTH & SAFETY LTD [GB]
AP - US 686839/96-A 19960726 [1996US-0686839]
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APPLICATION DATA (PATENT)
US 686839/96 19960726 [1996US-0686839]

19960726 US/AS02
ASSIGNMENT OF ASSIGNOR'S INTEREST
RACAL HEALTH & SAFETY LIMITED WESTERN ROAD BRACKNELL, BERKSHIRE
RG12 1RG, ENGLAN * BOWERS, JOHN LAWRENCE : 19960704

19971118 US/A
PATENT

19980617 US/AS02
ASSIGNMENT OF ASSIGNOR'S INTEREST
MINNESOTA MINING AND MANUFACTURING COMPANY P.O. BOX 33427 ST.
PAUL, MINNESOTA 55 * RACAL HEALTH & SAFETY LIMITED : 19980130

20000307 US/RF
REISSUE APPLICATION FILED
19991115

20020514 US/RF
REISSUE APPLICATION FILED
20011108

UP - 2002-22

Session finished: 22 JUL 2002 Time 18:09:45